

## CLAIMS LISTING

1. (previously presented) A web material for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein said substrate is a polyimide web, a hydrophilic woven textile, a textile comprising hydrophobic fibers that have been surface-treated with hydrophilic coatings, flexible metal or a metal oxide.
2. (previously presented) A web material according to claim 1 wherein said upstanding surface extends at most 500  $\mu\text{m}$  above the bottom of said microwells.
3. (previously presented) A web material according to claim 1 wherein said bottoms of said microwells have undergone a

surface treatment to improved the dynamics of fluid spreading.

4. (previously presented) A web material according to claim 1 wherein the total amount of microwells present on said web material is larger than 1000.
5. (previously presented) A web material according to claim 1 wherein the ratio of the total length (L) of said web to its width (W) is greater than 20.
6. (previously presented) A web material according to claim 1 wherein said microwells have an internal volume smaller than 10  $\mu$ l.
7. (previously presented) A web material according to claim 1 wherein a plurality of markers is present on said web material in the web direction.
8. (previously presented) A web material according to claim 7 wherein said marker is a barcode present at the edge of the substrate.

9. (previously presented) A web material according to claim 1 wherein an identifier is present at the start and/or the end of the web.
10. (Canceled)
11. (Canceled)
12. (Canceled)
13. (previously presented) The web material according to claim 1 wherein said substrate is an aluminium foil having a top layer of aluminium oxide applied by electrochemical oxidation.
14. (Canceled)
15. (previously presented) A web material for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding

surfaces on the other hand show a different hydrophilicity and wherein both sides of said substrate carry said microwells.

16. (previously presented)      A method for manufacturing a web material having microwells for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein said substrate is a polyimide web, a hydrophilic woven textile, a textile comprising hydrophobic fibers that have been surface-treated with hydrophilic coatings, flexible metal or a metal oxide, said method comprising the steps of, in order :
- providing a substrate in web form with a homogeneous hydrophilic surface covered with a heat or light sensitive hydrophobic layer having a particular degree of solubility in a developer,

- exposing pattern-wise said hydrophobic layer with heat or light to pattern-wise change said solubility to more or less soluble in said developer, and
- pattern-wise removing by said developer the soluble parts of said exposed hydrophobic heat or light sensitive layer, thereby forming a pattern of multiple microwells with hydrophilic bottoms and hydrophobic upstanding surfaces separated from each other by hydrophobic separating zones.

17. (previously presented)      A method for manufacturing a web material according to claim 16 wherein the solubility in the developer of the pattern-wise exposed parts is increased so that these exposed parts are removed by the developer and the non-exposed parts are retained (positive working mode).

18. (previously presented)      A method for manufacturing a web material according to claim 16 wherein the solubility in the developer of the pattern-wise exposed parts is decreased so that the non-exposed parts are removed by the developer and the exposed parts are retained (negative working mode).

19. (previously presented)      A method for manufacturing a web material having microwells for combinatorial experimentation

comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein said substrate is a polyimide web, a hydrophilic woven textile, a textile comprising hydrophobic fibers that have been surface-treated with hydrophilic coatings, flexible metal or a metal oxide, said method comprising the steps of, in order :

- providing a substrate in web form with a hydrophilic surface,
- pattern-wise applying hydrophobic areas on said substrate, thereby forming a pattern of multiple microwells with hydrophilic bottoms and hydrophobic upstanding surfaces separated from each other by hydrophobic separating zones.

20. (previously presented)      A method according to claim 19 wherein said areas are applied by non-impact printing.

21. (previously presented)      A method for manufacturing a web material having microwells for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein said substrate is a polyimide web, a hydrophilic woven textile, a textile comprising hydrophobic fibers that have been surface-treated with hydrophilic coatings, flexible metal or a metal oxide, said method comprising the steps of, in order, :

- providing a substrate in web form with a hydrophobic surface covered with a hydrophilic layer,
- pattern-wise ablating by heat parts of said hydrophilic layer, thereby forming a pattern of multiple microwells with hydrophobic bottoms and hydrophilic upstanding surfaces separated from each other by hydrophilic separating zones.

22.(previously presented)      An apparatus for rapid screening of substances for useful applications comprising :

- a holder, comprising an unwinding roll, and a web material having microwells for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein said substrate is a polyimide web, a hydrophilic woven textile, a textile comprising hydrophobic fibers that have been surface-treated with hydrophilic coatings, flexible metal or a metal oxide,
- an application zone suited for applying at least one substance in at least one of said microwells present in said application zone,
- a screening zone for determining a useful property of said substance in said screening zone,
- a mechanism to transport said web material from said holder



to said application zone and said screening zone, and  
- optionally a rewinding section.

23. (previously presented)      A method of rapid screening of substances for useful properties comprising the steps of, in order, :
- unrolling a web material for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein said substrate is a flexible hydrophobic polymeric material, a polyimide web, a hydrophilic woven textile, a textile comprising hydrophobic fibers that have been surface-treated with hydrophilic coatings, flexible metal or a metal oxide from an unwinding roll present in the holder of an apparatus according to claim 22,
  - passing said web material through the application zone of

said apparatus to apply at least one substance in at least one of said microwells present in said application zone,  
- passing said web material through the screening zone of said apparatus for determining a useful property of said at least one substance,  
- optionally rewinding said web material.

24. (currently amended) A web material for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein both sides of said substrate carry said microwells ~~Web material according to claim 15,~~ wherein said bottom of each of said microwells is further divided by a wall having a hydrophilicity different from the hydrophilicity of said bottom into at least two "baby

microwells", said wall having a height at least 50% lower than the height of said upstanding surface.

25. (previously presented) Web material according to claim 24, wherein said wall has a height at least 75% lower than the height of said upstanding surface.

26. (previously presented) Web material according to claim 15 wherein said upstanding surface extends at most 500  $\mu\text{m}$  above the bottom of said microwells.

27. (previously presented) Web material according to claim 15 wherein said bottoms of said microwells have undergone a surface treatment to improve the dynamics of fluid spreading.

28. (previously presented) Web material according to claim 15 wherein the total amount of microwells present on said web material is larger than 1000.

29. (previously presented) Web material according to claim 15 wherein the ratio of the total length (L) of said web to its width (W) is greater than 20.

30. (previously presented) Web material according to claim 15 wherein said microwells have an internal volume smaller than 10  $\mu$ l.
31. (previously presented) Web material according to claim 15 wherein a plurality of markers is present on said web material in the web direction.
32. (previously presented) Web material according to claim 31 wherein said marker is a barcode present at the edge of the substrate.
33. (previously presented) Web material according to claim 15 wherein an identifier is present at the start and/or the end of the web.
34. (previously presented) Web material according to claim 15 wherein said substrate is a flexible polymeric material.
35. (previously presented) Web material according to claim 34 wherein said flexible polymeric material is chosen from polyesters and polyimides.
36. (previously presented) Web material according to claim 15 wherein said substrate is a flexible metal or metal oxide.

37. (previously presented)      Web material according to claim 36 wherein said substrate is an aluminium foil having a top layer of aluminium oxide applied by electrochemical oxidation.

38. (previously presented)      Web material according to claim 15 wherein said substrate is flexible glass.

39-48. (cancelled)

59. (previously presented)      A method for manufacturing a web material having microwells for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein both sides of said substrate carry said microwells, said method comprising the steps of, in order :

- providing a substrate in web form with a homogeneous

hydrophilic surface covered with a heat or light sensitive hydrophobic layer having a particular degree of solubility in a developer,

- exposing pattern-wise said hydrophobic layer with heat or light to pattern-wise change said solubility to more or less soluble in said developer, and

- pattern-wise removing by said developer the soluble parts of said exposed hydrophobic heat or light sensitive layer, thereby forming a pattern of multiple microwells with hydrophilic bottoms and hydrophobic upstanding surfaces separated from each other by hydrophobic separating zones.

60. (previously presented)      A method for manufacturing a web material having microwells for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein both sides of

said substrate carry said microwells, said method comprising the steps of, in order :

- providing a substrate in web form with a hydrophilic surface,
- pattern-wise applying hydrophobic areas on said substrate, thereby forming a pattern of multiple microwells with hydrophilic bottoms and hydrophobic upstanding surfaces separated from each other by hydrophobic separating zones.

61. (previously presented)      A method for manufacturing a web material having microwells for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein both sides of said substrate carry said microwells, said method comprising the steps of, in order, :

- providing a substrate in web form with a hydrophobic

surface covered with a hydrophilic layer,

- pattern-wise ablating by heat parts of said hydrophilic layer, thereby forming a pattern of multiple microwells with hydrophobic bottoms and hydrophilic upstanding surfaces separated from each other by hydrophilic separating zones.

62.(previously presented)      An apparatus for rapid screening of substances for useful applications comprising :

- a holder, comprising an unwinding roll, for a web material having microwells for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein both sides of said substrate carry said microwells,
- an application zone suited for applying at least one substance in at least one of said microwells present in said application zone,



- a screening zone for determining a useful property of said substance in said screening zone,
- a mechanism to transport said web material from said holder to said application zone and said screening zone, and
- optionally a rewinding section.

63.(currently amended) A method of rapid screening of substances for useful properties comprising the steps of, in order:

- unrolling a web material for combinatorial experimentation comprising a substrate in web form and multiple microwells, arranged on said substrate in a predetermined pattern and separated from each other by separating zones, each microwell comprising a bottom and an upstanding surface formed by the adjacent separating zones, wherein the composition of said bottoms on the one hand and the composition of said separating zones and upstanding surfaces on the other hand show a different hydrophilicity and wherein both sides of said substrate carry said microwells from an unwinding roll present in the holder of an apparatus according to claim 62

22,

- passing said web material through the application zone of said apparatus to apply at least one substance in at least one of said microwells present in said application zone,
- passing said web material through the screening zone of said apparatus for determining a useful property of said at least one substance,
- optionally rewinding said web material.